Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently amended) An apparatus for estimating phase information, comprising:

a matched filter that outputs converted synchronization signals, based on received data, and converted information of the received data;

a CPU that receives the converted synchronization signals and the converted information to provide a first output signal based on ~~at least one of~~ the converted synchronization signals and the converted information outputted from the matched filter; and

a phase estimator that generates decoded data based on the received data, the estimator having a first averager that receives the first output signal from the ~~CPU~~ CPU, ~~and~~ the decoded ~~data~~ data, and the converted information to generate the phase information,

wherein the converted information comprises converted phase values (cosine A and sine A) of a received pilot signal.

2. (Original) The apparatus of claim 1, further comprising:

a first delayer receiving the phase information and outputting delayed phase information to the first averager, wherein

the first averager generates subsequent phase information based on the delayed phase information and the decoded data.

3. (Canceled).

4. (Original) The apparatus of claim 2, further comprising:

a second delayer receiving the phase information and outputting delayed phase information to a second averager, wherein

a second averager of the phase estimator generates the subsequent phase information based on the decoded data and the delayed phase information received from the second delayer.

5. (Previously Presented) The apparatus of claim 1, wherein:

the converted synchronization signals are at least one of locked position signals and locked energy signals.

6. (Original) The apparatus of claim 1, further comprising:

a plurality of multipliers that multiply the received data and a code; and

an adder that adds data outputted from the plurality of multipliers, wherein

the first averager averages data outputted from the adder with the first output signal.

7. (Previously Presented) The apparatus of claim 1, wherein the CPU provides the converted information as the first output signal to initialize the first averager.

8. (Currently amended) A method for estimating phase information, comprising:

estimating synchronization data, based on received data;

generating a Cos A signal and a Sin A signal to identify a converted phase value of the received data in a pilot signal;

generating decoded data based on the received data and a code, the code corresponding to a synchronization time of the synchronization data;

outputting an average value of ~~the~~ phase information obtained by averaging the synchronization data and the decoded data and using the converted phase value; ~~and~~

~~generating a Cos A signal and a Sin A signal to identify a converted phase value of the received data in a pilot signal~~.

9. (Canceled).

10. (Original) The method of claim 8, wherein the average value is initialized using the synchronization data.

11. (Canceled)

12. (Previously Presented) The method of claim 8, wherein the phase information is obtained by averaging the converted phase value of the pilot signal and the decoded data.

13. (Original) The method of claim 8, wherein subsequent phase information is obtained by averaging the phase information with subsequent decoded data.

14. (Currently amended) A method of estimating phase information, comprising:

generating a synchronization signal and a converted phase value of a pilot signal with a matched filter based on received data;

establishing an averaging period based on the synchronization signal and the converted phase value; and

averaging the converted phase value with decoded data during the averaging period to create the phase information for the averaging ~~period~~period.

wherein the converted phase value comprises one of a cosine A signal or a sine A signal.

15. (Original) The method of claim 14, further comprising multiplying the received data, received during the averaging period, by a pseudo-noise (PN) code to form the decoded data.

16. (Original) The method of claim 15, further comprising synchronizing the PN code with the averaging period.

17. (Original) The method of claim 14, wherein:

the synchronization signal is generated based on a synchronization preamble within the received data;

the converted phase value is generated based on a phase preamble within the received data; and

the converted phase value identifies a phase shift in the received data.

18. (Original) The method of claim 14, wherein:

the converted phase value identifies a phase shift in a transition between symbols

of the received data; and

the symbols are represented by multiple phases.

19. (Original) The method of claim 14, further comprising averaging the decoded data, received during a current averaging period, with the phase information of a previous averaging period to create the phase information for the current averaging period.

20. (Currently amended) A receiver for a communication system, ~~wherein the improvement comprises~~comprising:

a filter means for generating a synchronization signal and a converted phase value of a pilot signal based on received data;

a processor means for establishing an averaging period based on the synchronization signal and the converted phase value; and

an averaging means for averaging the converted phase value with decoded data during the averaging period to create phase information for the averaging ~~period~~period,

wherein the converted phase value comprises one of a cosine A signal or a sine A signal.

21. (Original) The receiver of claim 20, further comprising a correlator that multiplies the received data, received during the averaging period, by a pseudo-noise (PN) code to form the decoded data.

22. (Original) The receiver of claim 21, wherein the processor means synchronizes the PN code with the averaging period.

23. (Original) The receiver of claim 20, wherein:

the synchronization signal is generated based on a synchronization preamble within the received data;

the converted phase value is generated based on a phase preamble within the received data; and

the converted phase value identifies a phase shift in the received data.

24. (Original) The receiver of claim 20, wherein:

the converted phase value identifies a phase shift in a transition between symbols of the received data; and

the symbols are represented by multiple phases.

25. (Original) The receiver of claim 20, further comprising a delay means, operating in conjunction with the averaging means, for averaging the decoded data, received during a current averaging period, with the phase information of a previous averaging period to create the phase information for the current averaging period.